## DEC 2 0 2005 8

## ATTACHMENT A

Claims 1 - 27: (Cancelled)

- 28. (New) A catalyst system for polymerizing olefins comprising a product obtained by contacting:
  - (A) a metallocene complex of formula (I):

$$(Cp) (ZR^{1}_{m})_{n} (A)_{r}ML_{p}$$
 (I)

wherein  $(ZR^{1}_{m})_{n}$  is a divalent group bridging Cp and A;

Z is selected from C, Si, Ge, N and P;

 $R^1$  being equal or different from each other, is selected from hydrogen or a linear or branched, saturated or unsaturated  $C_1$ - $C_{20}$  alkyl,  $C_3$ - $C_{20}$  cycloalkyl,  $C_6$ - $C_{20}$  aryl,  $C_7$ - $C_{20}$  alkylaryl and  $C_7$ - $C_{20}$  arylalkyl;

Cp is a substituted or unsubstituted cyclopentadienyl group, optionally condensed to one or more substituted or unsubstituted, saturated, unsaturated or aromatic rings, containing from 4 to 6 carbon atoms, optionally containing one or more heteroatoms;

A is selected from -O-, -S-, and -N( $\mathbb{R}^2$ )-, wherein  $\mathbb{R}^2$  is selected from hydrogen, a linear or branched, saturated or unsaturated  $C_1$ - $C_{20}$  alkyl,  $C_3$ - $C_{20}$  cycloalkyl,  $C_6$ - $C_{20}$  aryl,  $C_7$ - $C_{20}$  alkylaryl and  $C_7$ - $C_{20}$  arylalkyl, or A is Cp;

M is selected from a transition metal belonging to group 3, 4, 5, and 6, or a lanthanide or actinide metal of the Periodic Table;

L being equal or different from each other, is a monoanionic sigma ligand selected from the group consisting of hydrogen, halogen,  $-R^3$ ,  $-OR^3$ ,  $-OCOR^3$ ,  $-SR^3$ ,  $-NR^3$ <sub>2</sub> and  $-PR^3$ <sub>2</sub>, wherein  $R^3$  is selected from a linear or branched, saturated or unsaturated  $C_1-C_{20}$  alkyl,  $C_3-C_{20}$  cycloalkyl,  $C_6-C_{20}$  aryl,  $C_7-C_{20}$  alkylaryl and  $C_7-C_{20}$  arylalkyl, wherein  $R^3$  optionally

contains one or more Si or Ge atoms;

m is 1 or 2;

n is an integer ranging from 0 to 4;

r is 0 or 1, with the proviso that n is 0 when r is 0;

 ${\bf p}$  is an integer equal to an oxidation state of M minus 2 when  ${\bf r}$ =1, and minus 1 when  ${\bf r}$ =0, and ranges from 1 to 4;

(B) an organometallic aluminium compound of formula (II):

Al 
$$[CH_2-C(Ar)R^4R^5]_xH_y$$
 (II)

wherein Ar is a substituted aryl group corresponding to formula (III):

(III)

wherein  $R^6$ ,  $R^8$  and  $R^{10}$  are selected from the group consisting of hydrogen, halogen,  $-R^3$ ,  $-C(0)R^3$ ,  $-OR^3$ ,  $-SR^3$ ,  $-NR^3$ <sub>2</sub> and  $-NO_2$ ;

 $R^7$  and  $R^9$  are selected from the group consisting of hydrogen, halogen, linear or branched, saturated or unsaturated  $C_1$ - $C_{20}$  alkyl,  $C_3$ - $C_{20}$  cycloalkyl,  $C_6$ - $C_{20}$  aryl,  $C_7$ - $C_{20}$  alkylaryl and  $C_7$ - $C_{20}$  arylalkyl, wherein  $R^7$  and  $R^9$  optionally contain one or more Si or Ge atoms; two adjacent substituents  $R^6$ - $R^{10}$  optionally form a ring, having 3 to 8 carbon atoms; with the proviso that  $R^6$ ,  $R^7$ ,  $R^8$ ,  $R^9$  and  $R^{10}$  cannot be hydrogen, and Ar cannot be an alkylaryl;

 $R^4$  is selected from a linear or branched, saturated or unsaturated,  $C_1$ - $C_{10}$  alkyl,  $C_6$ - $C_{20}$  aryl,  $C_7$ - $C_{20}$  arylalkyl and  $C_7$ - $C_{20}$  alkylaryl;

 $R^5$  is selected from hydrogen or a linear or branched, saturated or unsaturated,  $C_1$ - $C_{10}$  alkyl,  $C_6$ - $C_{20}$  aryl,  $C_7$ - $C_{20}$  arylalkyl and  $C_7$ - $C_{20}$  alkylaryl;  $R^4$  and  $R^5$  optionally form a ring, having 3 to 8 carbon atoms; a carbon atom in the compound of formula (II) being optionally replaced by a Si or a Ge atom;

x is 2 or 3;

y = 3 minus x; and

(C) water;

wherein a molar ratio between the organometallic aluminium compound (B) and the water (C) is between 1:1 and 100:1.

- 29. (New) The catalyst system according to claim 28, wherein the molar ratio is about 2:1.
- 30. (New) The catalyst system according to claim 28, wherein a molar ratio between the organometallic aluminium compound (B) and the metallocene complex (A) ranges from 50:1 to 50,000:1.
- 31. (New) The catalyst system according to claim 28, wherein M is selected from Ti, Zr or Hf.
- 32. (New) The catalyst system according to claim 28, wherein the divalent group  $(ZR_{\ m}^1)_n$  is selected from the group consisting of  $CR_2^1$ ,  $(CR_2^1)_2$ ,  $(CR_2^1)_3$ ,  $SiR_2^1$ ,  $GeR_2^1$ ,  $NR_2^1$  and  $PR_2^1$ ,  $R_2^1$  has the same meaning as in claim 19.
- 33. (New) The catalyst system according to claim 32, wherein the divalent group  $(ZR_m^1)_n$  is selected from the group consisting of Si(CH<sub>3</sub>)<sub>2</sub>, SiPh<sub>2</sub>, CH<sub>2</sub>, (CH<sub>2</sub>)<sub>2</sub>, (CH<sub>2</sub>)<sub>3</sub> and C(CH<sub>3</sub>)<sub>2</sub>.

- 34. (New) The catalyst system according to claim 28, wherein Cp is selected from the group consisting of cyclopentadienyl; mono-, di-, tri- and tetra-methyl cyclopentadienyl; 4-tbutyl-cyclopentadienyl; 4-adamantyl-cyclopentadienyl; indenyl; mono-, di-, tri- and tetra-methyl indenyl; 3-tbutyl-indenyl; 3-trimethylsilyl-indenyl; 4,5,6,7-tetrahydroindenyl; fluorenyl; 5,10-dihydroindeno[1,2-b]indol-10-yl; N-methyl- or N-phenyl-5,10-dihydroindeno [1,2-b]indol-10-yl; 5,6-dihydroindeno[2,1-b]indol-6-yl; N-methyl-or N-phenyl-5,6-dihydroindeno[2,1-b]indol-6-yl; azapentalene-4-yl; thiapentalene-4-yl; azapentalene-6-yl; thiapentalene-6-yl; and mono-, di- and tri-methyl-azapentalene-4-yl.
- 35. (New) The catalyst system according to claim 28, wherein L is selected from the group consisting of -Cl, -Br, -Me, -Et, -n-Bu, -sec-Bu, -Ph, -Bz, -CH<sub>2</sub>SiMe<sub>3</sub>, -OEt, -OPr, -OBu, -OBz and -NMe<sub>2</sub>.
- 36. (New) The catalyst system according to claim 28, wherein Ar is selected from the group consisting of 4-fluoro-phenyl, 4-chloro-phenyl, 4-methoxyphenyl, 4-nitrophenyl, 2,4-difluorophenyl, 2,6-difluorophenyl, 2,6-difluorophenyl, 3,5-difluorophenyl, 3,5-dichlorophenyl, 2,4,6-trifluorophenyl, 2,4,6-trichlorophenyl, 3,4,5-trifluorophenyl, 3,4,5-trichlorophenyl, pentafluorophenyl and pentachlorophenyl.
- 37. (New) The catalyst system according to claim 28, wherein the organometallic aluminium compound of formula (II) is selected from the group consisting of tris[2-(4-fluorophenyl)-propyl]aluminium, tris[2-(4-chloro-phenyl)-propyl]aluminium, and tris[2-(pentafluorophenyl)-

propyl]aluminium.

- 38. (New) A catalyst system for polymerizing olefins comprising a product obtained by contacting:
  - (A) a metallocene complex of formula (I):

$$(Cp) (ZR1m)n (A)rMLp$$
 (I)

wherein M, Cp,  $(ZR_{m}^{1})_{n}$ , A, L,  ${\bf r}$  and  ${\bf p}$  have the same meanings as in claim 28; and

(B') a product of a reaction between water and an organometallic aluminium compound of formula (II):

Al 
$$[CH_2-C(Ar)R^4R^5]_xH_y$$
 (II)

wherein Ar,  $R^4$ ,  $R^5$ ,  $\mathbf{x}$  and  $\mathbf{y}$  have the same meanings as in claim 28;

wherein a molar ratio between the organometallic aluminium compound and the water is between 1:1 and 100:1.

39. (New) The catalyst system according to claim 28, wherein the metallocene complex is pre-alkylated with at least one organometallic aluminium compound of formula (IV):

$$AlR^{11}_{3-z}H_z$$
 (IV)

wherein  $R^{11}$  is selected from a linear or branched, saturated or unsaturated,  $C_1\text{-}C_{10}$  alkyl,  $C_6\text{-}C_{20}$  aryl,  $C_7\text{-}C_{20}$  arylalkyl and  $C_7\text{-}C_{20}$  alkylaryl; and

z is 0 or 1.

40. (New) An alumoxane obtained by contacting an organometallic aluminium compound of formula (II)

Al 
$$[CH_2-C(Ar) R^4 R^5]_x H_y$$
 (II)

wherein Ar,  $R^4$ ,  $R^5$ ,  $\mathbf{x}$  and  $\mathbf{y}$  have the same meanings as in claim 28, with water, wherein a molar ratio between the organometallic aluminium compound and the water is between 1:1 and 100:1.

- 41. (New) The catalyst system for polymerizing olefins according to claim 28, wherein the olefins comprise at least one  $\alpha$ -olefin of formula  $CH_2$ =CHR, wherein R is hydrogen or a  $C_1$ - $C_{20}$  alkyl radical.
- 42. (New) The catalyst system for polymerizing olefins according to claim 41, wherein said  $\alpha$ -olefin is selected from the group consisting of propylene, 1-butene, 4-methyl-1-pentene, 1-hexene and 1-octene.
- 43. (New) The catalyst system for polymerizing olefins according to claim 28, wherein ethylene is copolymerized with an  $\alpha$ -olefin of formula  $CH_2=CHR'$ , wherein R' is selected from a linear, branched or cyclic  $C_1-C_{20}$  alkyl radical, or with a cycloolefin, and optionally with a polyene.
- 44. (New) The catalyst system according to claim 38, wherein the metallocene complex is pre-alkylated with one or more organometallic aluminum compounds of formula (IV):

$$AlR^{11}_{3-z}H_z$$
 (IV)

wherein  $R^{11}$  is selected from a linear or branched, saturated or unsaturated,  $C_1$ - $C_{10}$  alkyl,  $C_6$ - $C_{20}$  aryl,  $C_7$ - $C_{20}$  arylalkyl and  $C_7$ - $C_{20}$  alkylaryl; and

**z** is 0 or 1.

45. (New) The catalyst system for polymerizing olefins according to claim 38, wherein the olefins comprise at least one  $\alpha$ -olefin of formula CH<sub>2</sub>=CHR, wherein R is hydrogen or a C<sub>1</sub>-C<sub>20</sub> alkyl radical.

- 46. (New) The catalyst system for polymerizing olefins according to claim 45, wherein said  $\alpha$ -olefin is selected from the group consisting of propylene, 1-butene, 4-methyl-1-pentene, 1-hexene and 1-octene.
- 47. (New) The catalyst system for polymerizing olefins according to claim 38, wherein ethylene is copolymerized with an  $\alpha$ -olefin of formula  $CH_2$ =CHR', wherein R' is selected from a linear, branched or cyclic  $C_1$ - $C_{20}$  alkyl radical, or with a cycloolefin, and optionally with a polyene.
- 48. (New) The catalyst system for polymerizing olefins according to claim 39, wherein the olefins comprise at least one  $\alpha$ -olefin of formula  $CH_2$ =CHR, wherein R is hydrogen or a  $C_1$ - $C_{20}$  alkyl radical.
- 49. (New) The catalyst system for polymerizing olefins according to claim 48, wherein said  $\alpha$ -olefin is selected from the group consisting of propylene, 1-butene, 4-methyl-1-pentene, 1-hexene and 1-octene.
- 50. (New) The catalyst system for polymerizing olefins according to claim 39, wherein ethylene is copolymerized with an  $\alpha$ -olefin of formula  $CH_2$ =CHR', wherein R' is selected from a linear, branched or cyclic  $C_1$ - $C_{20}$  alkyl radical, or with a cycloolefin, and optionally with a polyene.